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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,779	04/14/2004	Kyung-Kyu Kang	8733.1001.00	4667
30827 7590 06/15/2007 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			EXAMINER QI, ZHI QIANG	
			ART UNIT 2871	PAPER NUMBER
			MAIL DATE 06/15/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/823,779

Applicant(s)

KANG ET AL.

Examiner

Mike Qi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 21, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2871

3. Claims 1-9 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,739,880 (Suzuki et al) in view of US 5,358,810 (Yoshino) and further in view of US 5,481,388 (Aoya).

Regarding claims 1,11 and 16, Suzuki teaches (col.9, line 62 – col.11, line 3;

Figs.5a- 5c) a liquid crystal display panel comprising:

- a black matrix (BM) formed of an organic resin material (acrylic resin or epoxy resin) (see col.10, lines 1-5), at a predetermined region of a first substrate (SUB2) and at a boundary region of pixels;
- a color filter (FIL) on the black matrix corresponding to the pixels;
- a passivation layer (PSV2) (as an overcoat layer) formed of an organic resin (acrylic resin or epoxy resin) (see col.10, lines 49-53) on the first substrate having the black matrix (BM) and the color filter (FIL) as shown in Fig.5; (concerning claims 11 and 16)
- a common electrode (COM) made of ITO on the passivation layer (PSV2) (overcoat layer);
- a seal pattern (SL) on the overcoat layer, also on the common electrode (COM), and partially overlap the black matrix (BM) as shown in Fig.5a;
- a second substrate (SUB1) having a thin film transistor, the second substrate being attached to the first substrate by the seal pattern.

Suzuki does not explicitly teach that the thickness of the overcoat layer is

Art Unit: 2871

between approximately about 1.2 $\mu$ m to about 5 $\mu$ m on the first substrate, and such thickness of the overcoat layer absorbing an external force and preventing compression or depression of the black matrix, and the seal pattern including a support member.

**Yoshino** teaches (col.5, lines 23-49; Fig.1) that the thickness of the overcoat layer (28) is 2.0 $\mu$ m (between 1.2  $\mu$ m – 5 $\mu$ m) so as to obtain a sufficient light-shielding effect.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP 2144.15 I.).

Concerning such thickness of the overcoat layer on the substrate absorbing an external force and preventing compression or depression of the black matrix that is the technical effect of such thickness of the overcoat layer, and the same structure has the same technical effect. As general available knowledge, because the overcoat layer against the black matrix, so that the overcoat layer having certain thickness when assembly the LCD, to crimp the two substrates together would absorb an external force so as to prevent compression or depression of the black matrix, and that have been at least obvious.

Concerning the seal pattern including a support member, **Aoya** teaches (col.2, lines 54-57) that glass fiber can function as buffering pressure at the time of crimp, and glass ball can function as regulating gap thickness as a stopper, and such glass fiber or glass balls are included in the sealing portion would be a support member for the seal pattern in order to hold a desired gap.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal panel of Suzuki with the teachings of employing overcoat layer having a certain thickness as taught by Yoshino and the seal patter including a support member as taught by Aoya, since the skilled in the art would be motivated for obtaining a sufficient light-shielding effect and holding a desired gap.

Regarding claims 2 and 12, Suzuki teaches (Figs. 5a-5c) that the black matrix (BM) is extended at least from the seal pattern (SL) formed region to one end of the portion of the first substrate (SUB2).

Regarding claims 3, 4, 13 and 14, Suzuki teaches (col.10, lines 1-5) that the black matrix is formed one of acrylic, epoxy and polyimide resin containing carbon black or black pigment.

Regarding claims 5 and 15, Suzuki teaches (col.10, lines 51-53) that the passivation layer (PSV2) (as overcoat layer) is an acrylic resin or an epoxy resin.

Regarding claims 6-9 and 17-20, Suzuki, Yoshino and Aoya teach the invention set forth above except for that a glass ball or glass fiber is added to the seal pattern as the support member in a weight ratio of about 1% or less, and the number of the support member in one unit area of the seal pattern about 500, 150 or fewer.

Aoya teaches (col.2, lines 21-30) a liquid crystal display device wherein glass fiber in a weight ratio of 1% and glass ball are added into the seal pattern in order to hold a desired gap thickness at a sealing portion between upper and lower substrates, and the use of glass fiber having a diameter of 7.4  $\mu\text{m}$  and the use of glass ball having a diameter of 7.0  $\mu\text{m}$  (col.2, lines 22-23, 38-41). As per applicant's own disclosure

(paragraphs 0077-0079, 0101-0103) that the number of support members (that is the glass balls or glass fibers) is varied according to a specific gravity or a weight ratio thereof, and as the generally used, if the diameter of the glass ball is between 3.8 to 7.5  $\mu\text{m}$ , approximately 150-550 glass balls are distributed in at least one of unit area of the seal pattern, and if the diameter of the glass fiber is between 3.8 to 7.5  $\mu\text{m}$ , approximately 30-200 glass fibers are distributed in at least one of unit area of the seal pattern. Such that the numbers of the glass balls or glass fibers are determined by the property of the glass balls or glass fibers, and the numbers of the glass balls and glass fibers would be determined by the certain gravity and the certain weight ratio of the glass balls and glass fibers

Aoya further teaches (col.2, lines 54-57) that glass fiber can function as buffering pressure at the time of crimp, and glass ball can function as regulating gap thickness as a stopper.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal panel of Suzuki, Yoshino and Aoya with the teachings of adding glass ball or glass fiber as a support member to the seal pattern as taught by Aoya, since the skilled in the art would be motivated for hold a desired gap thickness at the sealing portion between upper and lower substrates, and using glass fiber as buffering pressure at the time of crimp and using glass ball as regulating gap thickness as a stopper.

### ***Response to Arguments***

4. Applicant's arguments filed on May 21, 2007 have been fully considered but they are not persuasive.

In response to applicant's argument that the references do not teach the overcoat layer formed of an organic material; and having a thickness of 1.2  $\mu\text{m}$  to about 5  $\mu\text{m}$  functions as a buffer layer absorbing the external pressure and preventing depression of the black matrix formed on an organic material, it is respectfully pointed out that Yoshino teaches (col.5, lines 23-49; Fig.1) that the thickness of the overcoat layer (28) is 2.0 $\mu\text{m}$  (between 1.2  $\mu\text{m}$  – 5 $\mu\text{m}$ ), and it is a technical effect of such thickness of the overcoat layer as the same structure has the same technical effect. As a general available knowledge, because the overcoat layer against the black matrix, so that the overcoat layer having certain thickness when assembly the LCD, to crimp the two substrates together would absorb an external force so as to prevent compression or depression of the black matrix, and that have been at least obvious, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP 2144.15 I.).

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 7:30 am-6:00 pm.



Art Unit: 2871

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Mike Qi*

Mike Qi  
Patent examiner  
June 11, 2007